FACT SHEET AND STATEMENT OF BASIS
GREAT SALT LAKE MINERALS CORPORATION
UPDES PERMIT NO. UT0000647

MODIFIED DISCHARGE PERMIT AND STORM WATER PERMIT FOR MINOR INDUSTRIAL FACILITY

FACILITY CONTACT:

Responsible Official: Dr. Corey Milne
Site Manager
765 North 10500 West
Ogden, Utah 84404
Phone: (801) 732-3312

Facility Contact: Todd Robinson
Environmental Health and Safety Manager
Phone: (801) 732-3251

DESCRIPTION OF MODIFICATION: This permit is being modified to allow salt flushing discharges from the facility for the purpose of returning unused and unprocessed salt evaporated from the Great Salt Lake in excess of production capacity back to the Great Salt Lake. The return of excess salt is required by the Royalty Agreement between the discharger and the State of Utah governing the extraction of minerals from the Great Salt Lake. This modification will also allow the discharge of concentrated brine solution from evaporation ponds on the west side of the Great Salt Lake to the Behrens Trench for transport by gravity flow to solar evaporation ponds located on the east side of the Great Salt Lake. Both the flushing discharges and the discharge to the Behrens Trench are classified as "bitterns" by the U.S. Environmental Protection Agency. This modification also establishes new narrative effluent limitations applicable to all discharges from the facility. These effluent limits are based on applicable Categorical Effluent Limitation Guidelines for the facility.

DESCRIPTION OF FACILITY:
Great Salt Lake Minerals Corporation (GSL Minerals) removes water from the Great Salt Lake, and by the process of evaporation, concentrates and removes sodium chloride, potash, and magnesium chloride (Salt(s)). During this process, more sodium chloride is produced than any other product, but the potash and magnesium chloride are many times more valuable per ton than sodium chloride. The recovery of these minerals from lake water is a function of the degree of evaporation that occurs, with sodium chloride crystallizing before either potash or magnesium chloride. Bitterns that remain after the initial precipitation of salt from the west side ponds are transported across the lake to the east side, via the Behrens Trench, where they are further evaporated to produce additional salt, potash (fertilizer) and magnesium chloride (dust control and de-icing agents). GSL Minerals was authorized to construct the trench in the lake bed in 1991, pursuant to a Clean Water Act Section 404 permit issued by the U. S. Army Corps of Engineers. Due to the higher density of the bitterns compared to the lake water, the bitterns remain in the trench, with only nominal mixing with receiving waters at the interface. The vast majority of bitterns that are pumped into the trench are removed from the trench at its eastern terminus and pumped into the east solar evaporation ponds.

Since sodium chloride precipitates at a higher rate than potash or magnesium chloride, large amounts of sodium chloride remain in certain ponds after evaporation. These ponds are located on Bear River Bay, on the east side of the Lake. In accordance with the Royalty Agreement with the Division of Natural Resources, this excess sodium chloride must be returned to the Great Salt Lake (GSL). This is accomplished by pumping water from the Bear River Bay of the Great Salt Lake, dissolving the unprocessed salt found in the evaporation ponds and returning the brines to Bear River Bay. These ponds are used exclusively for solar evaporation, and there is no other physical or chemical processing activity, or any use of vehicles or machinery, in these flushing ponds. These ponds simply contain the remnant sodium chloride that was left behind when the bitterns were transferred to other ponds for extraction of potash and magnesium chloride. Only materials native to and originally withdrawn from the Great Salt Lake are discharged with these flows. The flushing activity takes place during the "non-solar season" from October through March. Not all outfalls will discharge during that time.

DESCRIPTION OF ADDITIONAL DISCHARGES:

In addition to Outfall 001, this permit modification will add seven previously existing outfalls that discharge only excess salt (bitterns) back to the Great Salt Lake (Outfalls 002-008). Additionally, another outfall is being added to allow the transport of bitterns from the west solar evaporation ponds into the Behrens Trench (Outfall 009). The geographical locations of the additional outfalls are listed below.

Outfall Number	Location of Discharge Point
002	Discharge to the Great Salt Lake, Bear River Bay. Latitude 41°15'54" and Longitude 112°15'03"
003	Discharge to the Great Salt Lake, Bear River Bay. Latitude 41°15'33" and Longitude 112°16'39"
004	Discharge to the Great Salt Lake, Bear River Bay. Latitude 41°14'42" and Longitude 112°16'38"
005	Discharge to the Great Salt Lake, Bear River Bay. Latitude 41°14'18" and Longitude 112°19'13"
006	Discharge to the Great Salt Lake, Bear River Bay. Latitude 41°16'10" and Longitude 112°20'11"
007	Discharge to the Great Salt Lake, Bear River Bay. Latitude 41°16'15" and Longitude 112°21'26"
008	Discharge to the Great Salt Lake, Bear River Bay. Latitude 41°13'54" and Longitude 112°21'42"
009	Discharge to the Great Salt Lake, Gunnison Bay. Latitude 41°15'44" and Longitude 112°53'29"

RECEIVING WATER CLASSIFICATION:

The Facility discharges to the Great Salt Lake through Outfall 001, Outfall 002, Outfall 003, Outfall 004, Outfall 005, Outfall 006, Outfall 007, Outfall 008 and Outfall 009. The GSL is classified as Class 5. Outfalls

001-008 discharge to the Bear River Bay, a sub-classification of the Great Salt Lake which is protected for infrequent primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including their necessary food chain. Outfall 009 discharges to Gunnison Bay, a sub-classification of the Great Salt Lake which is also protected for infrequent primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including their necessary food chain.

BASIS FOR EFFLUENT LIMITS:

No numeric water quality standards have been established for the Great Salt Lake with the exception of Selenium in Gilbert Bay. (Since this facility does not discharge to Gilbert Bay, the Selenium standards do not apply to this discharge.) The regulations that apply to Great Salt Lake Minerals' discharges are found in the *Code of Federal Regulations (CFR) Title 40, 436.120 (Subpart L - Salines from Brine Lakes Subcategory)* and *40 CFR 415.160 (Subpart P - Sodium Chloride Production Subcategory).* These regulations pertain to the production of sodium chloride and other saline salts via solar evaporation and establish effluent limits and standards for discharges from these types of operations. The effluent limitations established under these federal regulations are narrative in nature. There are no numerical effluent limitations applicable to discharges regulated under these subparts.

Both Categorical Effluent Limitation Guidelines prohibit the discharge of process wastewater pollutants into navigable waters. However, under Subpart P, "unused bitterns may be returned to the body of water from which the process brine solution was originally withdrawn, provided no additional pollutants are added to the bitterns during the production of sodium chloride." *40 CFR 415.160-163*. In this case, the process brine solution is originally withdrawn from, and later returned to, the Great Salt Lake. Similarly, under Subpart L, the discharge of process wastewater pollutants into navigable waters is allowed on a "net basis" if the discharge complies with *125.28* of that chapter (*40 CFR 125.28* has been changed and is now listed as 40 *CFR 122.45(g)*). *40 CFR 436.120-122*. As under Subpart P, "the source of the [discharger's] water supply is the same body of water into which the discharge is made." While water quality characteristics and use designations may vary across different areas of the Great Salt Lake, all portions of the Lake are hydrologically connected, and the Lake is considered a single body of water. In addition, DWQ has determined based on a review of available data that the discharge of flushing waters/bitterns into Bear River Bay will not result in degradation. The language in both *40 CFR 415.160-163* and *40 CFR 436.120-122* recognizes that there may be materials present in intake waters that are used for salt production that could be considered pollutants if discharged under other circumstances. However, as long as the facility adds no other materials during salt production, these discharges are allowed as there will be no net increase in "pollutant" loading to the body of water from which the process brine solution was originally withdrawn.

Accordingly, as part of the permit modification, an additional narrative effluent limitation is being added to this permit, applicable to all outfalls. Previous versions of the permit have contained a site-specific narrative standard, which is being retained. The modified permit reflects the language of the previous permits and the regulatory requirements of *40 CFR 415.160-163* and *40 CFR 436.120-122*. The new language is being added to clarify the activities that are expressly allowed by this permit. Specifically, there shall be no discharge of process wastewater pollutants to navigable waters, except that unused bitterns may be returned to the Great Salt Lake, and the discharge may contain materials originally present in Great Salt Lake waters or intake waters. The Permittee shall add no additional materials to the Lake water and/or intake water prior to discharge. The bitterns exception applies both to process brines discharged to the Behrens Trench and to flushing waters used to return excess salt to the Great Salt Lake.

Based on *UAC R317-1-3.2C*, pH must remain in the range of 6.5 to 9.0 standard units. Because oil and

grease sources are present in the processing and shipping areas, the potential exists for their addition to process water (Outfall 001). Thus, oil and grease concentrations are limited to 10 mg/L (based on best professional judgment [BPJ]). A grab sample for Oil and Grease will only be required if a visible sheen is observed in the effluent. These limits are also being applied to Outfalls 002-009, based on BPJ.

SUMMARY OF LIMITATIONS:

NARRATIVE EFFLUENT LIMITATIONS:

Specific Limitations and Self-Monitoring Requirements. Effective immediately and lasting the duration of this permit, the permittee is authorized to discharge from Outfall 001, Outfall 002, Outfall 003, Outfall 004, Outfall 005, Outfall 006, Outfall 007, Outfall 008 and Outfall 009, as follows:

1. Narrative Effluent Limitations. All outfalls shall be subject to the following narrative effluent limitations.

There shall be no discharge of process wastewater pollutants to navigable waters except as follows:

a) unused bitterns may be returned to the Great Salt Lake, including excess brines that are flushed back to the Lake and brines that are pumped into the Behrens Trench for transport across the Lake; and

b) the prohibition against discharge of process wastewater pollutants shall be applied on a net basis.

The discharge may contain any materials originally present in Great Salt Lake waters or intake waters. The Permittee shall add no additional materials to the Lake water and/or intake water prior to discharge. This narrative limitation does not prohibit storm water discharges as allowed in Part II of the Permit.

NUMERIC EFFLUENT LIMITATIONS:

All outfalls shall also be subject to the following numeric effluent limitations. Such discharges shall be limited and monitored by the permittee as specified below:

Parameter	Effluent Limitations			
	Maximum Monthly Average	Maximum Weekly Average	Daily Minimum	Daily Maximum
Oil & Grease, mg/L	NA	NA	NA	10.0
pH, Standard Units	NA	NA	6.5	9.0

NA – Not Applicable

SELF MONITORING AND REPORTING REQUIREMENTS:

Self-Monitoring and Reporting Requirements a/			
Parameter	Frequency	Sample Type	Units
Total Flow a/ b/	Monthly	Measured	MGD
Oil & Grease	Monthly	Visual c/	mg/L
pH	Monthly	Grab	SU

a/ Flow measurements of effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.

b/ If the rate of discharge is controlled, the rate and duration of discharge shall be reported.

c/ A grab sample for Oil and Grease will be required when a visible sheen is observed in the effluent.

PERMIT DURATION:

It is recommended that this permit be effective until the original termination date of September 30, 2013.

Drafted by Lonnie Shull
Environmental Scientist
Utah Division of Water Quality
Drafted January 11, 2010